

SEQUENCE LISTING



(1) GENERAL INFORMATION:

(i) APPLICANT: LOCARNI, STEPHEN A
BARTHOLMEUSZ, A I
AYE, THEIN T
DE MAN, ROBERT

(ii) TITLE OF INVENTION: VIRAL VARIANTS AND METHODS FOR DETECTING
SAME

(iii) NUMBER OF SEQUENCES: 41

(iv) CORRESPONDENCE ADDRESS:

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TECH CENTER 1600/2900

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.30

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: US 09/306,420
(B) FILING DATE: 06-MAY-1999
(C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: WO PCT/AU97/00520
(B) FILING DATE: 15-AUG-1997

(viii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: AU PO3519
(B) FILING DATE: 08-NOV-1996

(ix) ATTORNEY/AGENT INFORMATION:

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(B) REGISTRATION NUMBER: 36663
(C) REFERENCE/DOCKET NUMBER: 2551-28

(x) TELECOMMUNICATION INFORMATION:

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(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

GGA GTG TGG ATT CGC ACT CC

20

(2) INFORMATION FOR SEQ ID NO:2:

362883

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

GCT CCA AAT TCT TTA TA

17

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

CCT TTA CCC CGT TGC CCG GC

20

(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:


GCT CCA AAT TCT TTA TA

17

(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

GCC GCG TCG CAG AAG ATC TCA AT

23

(2) INFORMATION FOR SEQ ID NO:6:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

GGT TCT ATC CTA ACC TTA CC

20

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

GCC TCA TTT TGT GGG TCA CCA TA

23

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

TGG GGG TGG AGC CCT CAG GCT

21

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

CAC AAC ATT CCA CCA AGC TC

20

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

AAA TTC GCA GTC CCC AAC

18

(2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

GTT TCC CTC TTC TTG CTG T

19

(2) INFORMATION FOR SEQ ID NO:12:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

TTT TCT TTT GTC TTT GGG TAT

21

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

CCA ACT TAC AAG GCC TTT CTG

21

(2) INFORMATION FOR SEQ ID NO:14:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

CAT CGT TTC CAT GGC TGC TAG GC

23

(2) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

GTT TCC CTC TTC TTG CTG T

19

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

ATA CCC AAA GAC AAA AGA AAA

21

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 550 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

RJW (ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 1..549

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

TCT TCC AAT TTG TCC TGG TTA TCG CTG GAT GTG TCT GCG GCG TTT TAT
Ser Ser Asn Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr
1 5 10 15

48

CAT ATT CCT CTT CAT CCT GCT ATG CCT CAT CTT CTT ATT GGT TCT
His Ile Pro Leu His Pro Ala Ala Met Pro His Leu Leu Ile Gly Ser
20 25 30

96

TCT GGA TTA TCA AGG TAT GTT GCC CGT TTG TCC TCT AAT TCC AGG ATC
Ser Gly Leu Ser Arg Tyr Val Ala Arg Leu Ser Ser Asn Ser Arg Ile

144

35 40 45

AAC AAC AAC ATG CAA AAC CTG CAC GAC TCC TGC TCA AGG CAA CTC TAC
Asn Asn Asn Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln Leu Tyr
50 55 60

192

GTT TCC CTC ATG TTG CTG TAC AAA ACC TAC GGA GAG AAA TTG CAC CTG
Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Glu Lys Leu His Leu
65 70 75 80

240

TAT TCC CAT CCC ATC GTC CTG GGC TTT CGC AAA ATA CCT ATG GGA GTG
Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met Gly Val
85 90 95

288

GGC CTC AGT CCG TTT CTC TTG GCT CAG TTT ACT AGT GGC ATT TGT TCA
Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Cys Ser

336

362883

100	105	110	
GTG GTT CGT AGG GCT TTC CCC CAC TGT TTG GCT TTC AGC TAT ATG GAT			384
Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr Met Asp			
115	120	125	
GAT GTG GTA TTG GGG GCC AAG TCT GTA CAG CAT CGT GAG GCC CTT TAT			432
Asp Val Val Leu Gly Ala Lys Ser Val Gln His Arg Glu Ala Leu Tyr			
130	135	140	
ACC GCT GTT ACC AAT TTT CTT TTG TCT CTG GGT ATA CAT TTA AAC CCT			480
Thr Ala Val Thr Asn Phe Leu Leu Ser Leu Gly Ile His Leu Asn Pro			
145	150	155	160
AAC AAA ACA AAA AGA TGG GGT TAT TCC CTA AAC TTC ATG GGT TAC ATA			528
Asn Lys Thr Lys Arg Trp Gly Tyr Ser Leu Asn Phe Met Gly Tyr Ile			
165	170	175	
ATT GGA AGT TGG GGA ACA TTG C			550
Ile Gly Ser Trp Gly Thr Leu			
180			

(2) INFORMATION FOR SEQ ID NO:18:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 183 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear

Al Um
(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Ser	Ser	Asn	Leu	Ser	Trp	Leu	Ser	Leu	Asp	Val	Ser	Ala	Ala	Phe	Tyr
1			5					10					15		
His Ile Pro Leu His Pro Ala Ala Met Pro His Leu Leu Ile Gly Ser															
20 25 30															
Ser Gly Leu Ser Arg Tyr Val Ala Arg Leu Ser Ser Asn Ser Arg Ile															
35 40 45															
Asn Asn Asn Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln Leu Tyr															
50 55 60															
Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Glu Lys Leu His Leu															
65 70 75 80															
Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met Gly Val															
85 90 95															
Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Cys Ser															
100 105 110															
Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr Met Asp															
115 120 125															
Asp Val Val Leu Gly Ala Lys Ser Val Gln His Arg Glu Ala Leu Tyr															
130 135 140															
Thr Ala Val Thr Asn Phe Leu Leu Ser Leu Gly Ile His Leu Asn Pro															
145 150 155 160															
Asn Lys Thr Lys Arg Trp Gly Tyr Ser Leu Asn Phe Met Gly Tyr Ile															
165 170 175															

Ile Gly Ser Trp Gly Thr Leu
180

(2) INFORMATION FOR SEQ ID NO:19:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 550 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

- (ix) FEATURE:
(A) NAME/KEY: CDS
(B) LOCATION: 2..550

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

T CTT CCA ATT TGT CCT GGT TAT CGC TGG ATG TGT CTG CGG CGT TTT	46
Leu Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys Leu Arg Arg Phe	
1 5 10 15	
ATC ATA TTC CTC TTC ATC CTG CTG CTA TGC CTC ATC TTC TTA TTG GTT	94
Ile Ile Phe Leu Phe Ile Leu Leu Cys Leu Ile Phe Leu Leu Val	
20 25 30	
CTT CTG GAT TAT CAA GGT ATG TTG CCC GTT TGT CCT CTA ATT CCA GGA	142
Leu Leu Asp Tyr Gln Gly Met Leu Pro Val Cys Pro Leu Ile Pro Gly	
35 40 45	
TCA ACA ACA ACA TGC AAA ACC TGC ACG ACT CCT GCT CAA GGC AAC TCT	190
Ser Thr Thr Cys Lys Thr Cys Thr Pro Ala Gln Gly Asn Ser	
50 55 60	
ACG TTT CCC TCA TGT TGC TGT ACA AAA CCT ACG GAG AGA AAT TGC ACC	238
Thr Phe Pro Ser Cys Cys Thr Lys Pro Thr Glu Arg Asn Cys Thr	
65 70 75	
TGT ATT CCC ATC CCA TCG TCC TGG GCT TTC GCA AAA TAC CTA TGG GAG	286
Cys Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Lys Tyr Leu Trp Glu	
80 85 90 95	
TGG GCC TCA GTC CGT TTC TCT TGG CTC AGT TTA CTA GTG CCA TTT GTT	334
Trp Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val	
100 105 110	
CAG TGG TTC GTA GGG CTT TCC CCC ACT GTT TGG CTT TCA GCT ATA TGG	382
Gln Trp Phe Val Gly Leu Ser Pro Thr Val Trp Leu Ser Ala Ile Trp	
115 120 125	
ATG ATG TGG TAT TGG GGG CCA AGT CTG TAC AGC ATC GTG AGG CCC TTT	430
Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Ser Ile Val Arg Pro Phe	
130 135 140	
ATA CCG CTG TTA CCA ATT TTC TTT TGT CTC TGG GTC TAC ATT TAA ACC	478
Ile Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile * Thr	
145 150 155	
CTA ACA AAA CAA AAA GAT GGG GTT ATT CCC TAA ACT TCA TGG GTT ACA	526
Leu Thr Lys Gln Lys Asp Gly Val Ile Pro * Thr Ser Trp Val Thr	
160 165 170 175	
TAA TTG GAA GTT GGG GAA CAT TGC	550
* Leu Glu Val Gly Glu His Cys	

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 157 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Leu Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys Leu Arg Arg Phe Ile
 1 5 10 15
 Ile Phe Leu Phe Ile Leu Leu Cys Leu Ile Phe Leu Leu Val Leu
 20 25 30
 Leu Asp Tyr Gln Gly Met Leu Pro Val Cys Pro Leu Ile Pro Gly Ser
 35 40 45
 Thr Thr Thr Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser Thr
 50 55 60
 Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Glu Arg Asn Cys Thr Cys
 65 70 75 80
 Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Lys Tyr Leu Trp Glu Trp
 85 90 95
 Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln
 100 105 110
 Trp Phe Val Gly Leu Ser Pro Thr Val Trp Leu Ser Ala Ile Trp Met
 115 120 125
 Met Trp Tyr Trp Gly Pro Ser Leu Tyr Ser Ile Val Arg Pro Phe Ile
 130 135 140
 Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile
 145 150 155

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Thr Leu Thr Lys Gln Lys Asp Gly Val Ile Pro
 1 5 10

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 5 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Thr Ser Trp Val Thr
1 5

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Leu Glu Val Gly Glu His Cys
1 5

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 27 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /product= "X = S OR A"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 13
- (D) OTHER INFORMATION: /product= "X = I OR L"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 17
- (D) OTHER INFORMATION: /product= "X = V or G"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Xaa His Pro Thr Leu Ile Val Leu Gly Phe Arg Lys Xaa Pro Met Gly
1 5 10 15

Xaa Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe
20 25

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 47 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /product= "X = Q OR K"

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 16
(D) OTHER INFORMATION: /product= "X = S OR A"

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 20
(D) OTHER INFORMATION: /product= "X= I OR V"

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 26
(D) OTHER INFORMATION: /product= "X = I OR L"

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 30
(D) OTHER INFORMATION: /product= "X = V OR G"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Xaa Thr Tyr Ile Phe Gly Arg Ile Trp Lys Leu His Leu Tyr Leu Xaa
1 5 10 15

His Pro Ile Xaa Leu Gly Phe Arg Lys Xaa Pro Met Gly Xaa Gly Leu
20 25 30

Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Cys Leu Ser
35 40 45

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(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 11 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /product= "X = A OR V"

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /product= "X = S OR A"

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(D) OTHER INFORMATION: /product= "X = V, L OR M"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Xaa Phe Xaa Tyr Met Asp Asp Xaa Val Leu Gly
1 5 10

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 44 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /product= "X = S OR A"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 5
- (D) OTHER INFORMATION: /product= "X = I OR V"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 8
- (D) OTHER INFORMATION: /product= "X = F OR L"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 11
- (D) OTHER INFORMATION: /product= "X = I OR L"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 15
- (D) OTHER INFORMATION: /product= "X = L, V OR G"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 19
- (D) OTHER INFORMATION: /product= "X = P OR L"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 22
- (D) OTHER INFORMATION: /product= "X = L OR M"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 29
- (D) OTHER INFORMATION: /product= "X = I OR L"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 30
- (D) OTHER INFORMATION: /product= "X = C OR L"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 31
- (D) OTHER INFORMATION: /product= "X = A OR V"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site

- (B) LOCATION: 33
(D) OTHER INFORMATION: /product= "X = S OR A"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 35
(D) OTHER INFORMATION: /product= "X = M, I OR V"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 38
(D) OTHER INFORMATION: /product= "X = V, L OR M"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 43
(D) OTHER INFORMATION: /product= "X = K OR R"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 44
(D) OTHER INFORMATION: /product= "X = S OR T"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Xaa His Pro Ile Xaa Leu Gly Xaa Arg Lys Xaa Pro Met Gly Xaa Gly
1 5 10 15

Leu Ser Xaa Phe Leu Xaa Ala Gln Phe Thr Ser Ala Xaa Xaa Xaa Phe
20 25 30

Xaa Tyr Xaa Asp Asp Xaa Val Leu Gly Ala Xaa Xaa
35 40

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(2) INFORMATION FOR SEQ ID NO:28:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 52 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(D) OTHER INFORMATION: /product= "X = Q OR K"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(D) OTHER INFORMATION: /product= "X = Y OR F"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 4
(D) OTHER INFORMATION: /product= "X = G OR E"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(D) OTHER INFORMATION: /product= "X = R, W OR K"
- (ix) FEATURE:

- (A) NAME/KEY: Modified-site
(B) LOCATION: 10
(D) OTHER INFORMATION: /product= "X = Y OR L"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 11
(D) OTHER INFORMATION: /product= "X = S OR A"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 14
(D) OTHER INFORMATION: /product= "X = I OR V"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 17
(D) OTHER INFORMATION: /product= "X = F OR L"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 19
(D) OTHER INFORMATION: /product= "X = I OR L"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 23
(D) OTHER INFORMATION: /product= "X = L, V OR G"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 27
(D) OTHER INFORMATION: /product= "X = P OR L"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 30
(D) OTHER INFORMATION: /product= "X = L OR M"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 37
(D) OTHER INFORMATION: /product= "X = I OR L"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 38
(D) OTHER INFORMATION: /product= "X = C OR L"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 39
(D) OTHER INFORMATION: /product= "X = A OR V"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 41
(D) OTHER INFORMATION: /product= "X = S OR A"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 43
(D) OTHER INFORMATION: /product= "X = M, I OR V"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 46

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(D) OTHER INFORMATION: /product= "X = V, L OR M"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 51
- (D) OTHER INFORMATION: /product= "X = K OR R"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 52
- (D) OTHER INFORMATION: /product= "X = S OR T"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Xaa Thr Xaa Xaa Xaa Lys Leu His Leu Xaa Xaa His Pro Xaa Leu Gly
1 5 10 15

Xaa Lys Xaa Pro Met Gly Xaa Gly Leu Ser Xaa Phe Leu Xaa Ala Gln
20 25 30

Phe Thr Ser Ala Xaa Xaa Xaa Phe Xaa Tyr Xaa Asp Asp Xaa Val Leu
35 40 45

Gly Ala Xaa Xaa
50

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 179 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide


(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2
- (D) OTHER INFORMATION: /product= "X = N OR D"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 17
- (D) OTHER INFORMATION: /product= "X = I OR P"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 29
- (D) OTHER INFORMATION: /product= "X = I OR V"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 35
- (D) OTHER INFORMATION: /product= "X = S OR D"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 44
- (D) OTHER INFORMATION: /product= "X = T OR N"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 46
- (D) OTHER INFORMATION: /product= "X = R OR N"

- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 47
(D) OTHER INFORMATION: /product= " X = N OR I"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 48
(D) OTHER INFORMATION: /product= "MORE THAN 3 DIFFERENT AA POSSIBLE"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 50
(D) OTHER INFORMATION: /product= " X = N, Y OR H"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 52
(D) OTHER INFORMATION: /product= " X = Y OR H"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 53
(D) OTHER INFORMATION: /product= " X = G OR R"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 54
(D) OTHER INFORMATION: /product= "MORE THAN 3 POSSIBILITIES"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 55
(D) OTHER INFORMATION: /product= "MORE THAN 3 POSSIBILITIES"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 56
(D) OTHER INFORMATION: /product= "MORE THAN 3 POSSIBILITIES"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 57
(D) OTHER INFORMATION: /product= " X = D OR N"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 60
(D) OTHER INFORMATION: /product= " X = D OR N"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 61
(D) OTHER INFORMATION: /product= " X = S OR Y"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 65
(D) OTHER INFORMATION: /product= " X = N OR Q"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site

- (B) LOCATION: 84
(D) OTHER INFORMATION: /product= " X = Y OR L"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 85
(D) OTHER INFORMATION: /product= " X = S OR A"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 88
(D) OTHER INFORMATION: /product= " X = I OR V"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 94
(D) OTHER INFORMATION: /product= " X = I OR L"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 98
(D) OTHER INFORMATION: /product= " X = V OR G"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 113
(D) OTHER INFORMATION: /product= " X = C OR L"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 114
(D) OTHER INFORMATION: /product= " X = A OR S"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 115
(D) OTHER INFORMATION: /product= " X = V OR M"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 116
(D) OTHER INFORMATION: /product= "X =V OR T"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 117
(D) OTHER INFORMATION: /product= "X =R OR C"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 121
(D) OTHER INFORMATION: /product= "X =F OR P"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 124
(D) OTHER INFORMATION: /product= "X =L OR V"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 125
(D) OTHER INFORMATION: /product= "X =A OR V"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 127
(D) OTHER INFORMATION: /product= "X =S OR A"

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- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 132
(D) OTHER INFORMATION: /product= "X =V, L OR M"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 137
(D) OTHER INFORMATION: /product= "X =K OR R"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 138
(D) OTHER INFORMATION: /product= "X =S OR T"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 139
(D) OTHER INFORMATION: /product= "X =V OR G"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 140
(D) OTHER INFORMATION: /product= "X =Q OR E"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 142
(D) OTHER INFORMATION: /product= "X =L, S OR R"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 144
(D) OTHER INFORMATION: /product= "X =S OR F"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 146
(D) OTHER INFORMATION: /product= "X =F OR Y"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 147
(D) OTHER INFORMATION: /product= "X =T OR A"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 148
(D) OTHER INFORMATION: /product= "X =A OR S"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 149
(D) OTHER INFORMATION: /product= "X =V OR I"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 150
(D) OTHER INFORMATION: /product= "X =T OR C"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 151
(D) OTHER INFORMATION: /product= "X =N OR S"
- (ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 152
(D) OTHER INFORMATION: /product= "X =F OR V"

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 155
(D) OTHER INFORMATION: /product= "X =S OR D"

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 156
(D) OTHER INFORMATION: /product= "X =L OR V"

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 163
(D) OTHER INFORMATION: /product= "X =N OR Q"

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 178
(D) OTHER INFORMATION: /product= "X =V OR I"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Ser Xaa Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr His
1 5 10 15

Xaa Pro Leu His Pro Ala Ala Met Pro His Leu Leu Xaa Gly Ser Ser
20 25 30

Gly Leu Xaa Arg Tyr Val Ala Arg Leu Ser Ser Xaa Ser Xaa Xaa
35 40 45

Asn Xaa Gln Xaa Xaa Xaa Xaa Xaa Xaa Leu His Xaa Xaa Cys Ser Arg
50 55 60

Xaa Leu Tyr Val Ser Leu Xaa Leu Leu Tyr Xaa Thr Xaa Gly Xaa Lys
65 70 75 80

Leu His Leu Xaa Xaa His Pro Xaa Leu Gly Phe Arg Lys Xaa Pro Met
85 90 95

Gly Xaa Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile
100 105 110

Xaa Xaa Xaa Xaa Xaa Arg Ala Phe Xaa His Cys Xaa Xaa Phe Xaa Tyr
115 120 125

Met Asp Asp Xaa Val Leu Gly Ala Xaa Xaa Xaa His Xaa Glu Xaa
130 135 140

Leu Xaa Xaa Xaa Xaa Xaa Xaa Leu Leu Xaa Xaa Gly Ile His Leu
145 150 155 160

Asn Pro Xaa Lys Thr Lys Arg Trp Gly Tyr Ser Leu Asn Phe Met Gly
165 170 175

Tyr Xaa Gly

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 4 amino acids

- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Tyr Met Asp Asp
1

(2) INFORMATION FOR SEQ ID NO:31:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 71 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Ser Asp Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr Ile
1 5 10 15

His Ile Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile
20 25 30

Ile Leu Gly Phe Arg Lys Ile Pro Met Gly Val Gly Leu Ser Pro Phe
35 40 45

Leu Ile Leu Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr
50 55 60

Met Asp Asp Val Val Leu Gly
65 70

(2) INFORMATION FOR SEQ ID NO:32:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 69 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Ser Asp Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr His
1 5 10 15

Gln Thr Phe Gly Arg Lys Ile Leu His Leu Tyr Ser His Pro Ile Ile
20 25 30

Leu Gly Phe Arg Lys Ile Pro Met Gly Leu Gly Leu Ser Leu Phe Leu
35 40 45

Met Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr Met Asp
50 55 60

Asp Val Val Leu Gly
65

(2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 68 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Thr Asp Leu Gln Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr His
1 5 10 15

Lys Thr Tyr Gly Arg Lys Leu His Leu Leu Ala His Pro Phe Ile Met
20 25 30

Gly Phe Arg Lys Leu Phe Met Gly Val Gly Leu Ser Pro Phe Leu Leu
35 40 45

Ala Gln Phe Thr Ser Ala Leu Ala Ser Val Phe Ala Tyr Met Asp Asp
50 55 60

Leu Val Leu Gly
65

(2) INFORMATION FOR SEQ ID NO:34:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 54 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Lys Lys Lys Ser Val Thr Val Leu Asp Val Gly Asp Ala Tyr Phe Ser
1 5 10 15

Arg Tyr Gln Tyr Asn Val Leu Pro Gln Gly Trp Lys Gly Ser Pro Ala
20 25 30

Ile Phe Gln Ser Ser His Thr Lys Ile Leu Glu Ile Tyr Gln Tyr Met
35 40 45

Asp Asp Leu Tyr Val Gly
50

(2) INFORMATION FOR SEQ ID NO:35:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 33 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Thr Thr Ile Gly Arg Glu Met Leu Leu Ala Thr Arg Glu Tyr Val His
1 5 10 15

Ala Arg Trp Ala Ala Phe Glu Gln Leu Leu Ala Asp Phe Pro Glu Ala
20 25 30

Ala

(2) INFORMATION FOR SEQ ID NO:36:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 52 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile Ile Leu
1 5 10 15

Gly Phe Arg Lys Ile Pro Met Gly Leu Gly Leu Ser Leu Phe Leu Met
20 25 30

Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr Met Asp Asp
35 40 45

Val Val Leu Gly
50

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 52 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile Ile Leu
1 5 10 15

Gly Phe Arg Lys Ile Pro Met Gly Val Gly Leu Ser Pro Phe Leu Met
20 25 30

Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr Met Asp Asp
35 40 45

Val Val Leu Gly
50

(2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 52 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
(B) LOCATION: 46
(D) OTHER INFORMATION: /product= "X = V or I"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile Ile Leu
1 5 10 15

Gly Leu Arg Lys Ile Pro Met Gly Val Gly Leu Ser Pro Phe Leu Met
20 25 30

Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr Xaa Asp Asp
35 40 45

Val Val Leu Gly
50

(2) INFORMATION FOR SEQ ID NO:39:

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(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 52 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile Val Leu
1 5 10 15

Gly Phe Arg Lys Ile Pro Met Gly Val Gly Leu Ser Pro Phe Leu Leu
20 25 30

Ala Gln Phe Thr Ser Ala Leu Cys Ser Ala Phe Ser Tyr Met Asp Asp
35 40 45

Val Val Leu Gly
50

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Ala Phe Ser Tyr Met Asp Asp Val Val Leu Gly Ala Lys Thr
1 5 10

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 54 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /product= " X = S OR A"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 4
- (D) OTHER INFORMATION: /product= " X = I OR V"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 10
- (D) OTHER INFORMATION: /product= " X = I OR L"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 14
- (D) OTHER INFORMATION: /product= " X = V OR G"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 29
- (D) OTHER INFORMATION: /product= " X = C OR L"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 30
- (D) OTHER INFORMATION: /product= " X = A OR S"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 31
- (D) OTHER INFORMATION: /product= " X = V OR M"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 32
- (D) OTHER INFORMATION: /product= "X =V OR T"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 33
- (D) OTHER INFORMATION: /product= "X =R OR C"

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
(B) LOCATION: 37
(D) OTHER INFORMATION: /product= "X =F OR P"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 40
(D) OTHER INFORMATION: /product= "X =L OR V"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 41
(D) OTHER INFORMATION: /product= "X =A OR V"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 43
(D) OTHER INFORMATION: /product= "X =S OR A"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 48
(D) OTHER INFORMATION: /product= "X =V, L OR M"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 53
(D) OTHER INFORMATION: /product= "X =K OR R"
- (ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 54
(D) OTHER INFORMATION: /product= "X =S OR T"

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Xaa His Pro Xaa Leu Gly Phe Arg Lys Xaa Pro Met Gly Xaa Gly Leu
1 5 10 15
Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Xaa Xaa Xaa Xaa
20 25 30
Xaa Arg Ala Phe Xaa His Cys Xaa Xaa Phe Xaa Tyr Met Asp Asp Xaa
35 40 45
Val Leu Gly Ala Xaa Xaa
50
